

SECTION 306 BLENDED BASE COURSE

306.01 DESCRIPTION.

This work consists of blending and placing the existing aggregate base, existing bituminous surfacing and possibly one or more courses of aggregate into a uniform base material.

306.02 MATERIALS.

- A. **Blended Material.** The blended material shall have 97 to 100% passing a 2-inch sieve and 90 to 100 percent passing a 1 1/2 inch sieve.
- B. **Aggregate.** The aggregate shall meet Section 816 for a Cl. 3M aggregate.
- C. **Acceptance.**
 - 1. **Aggregate.** The Cl. 3M aggregate or the aggregate specified to blend with the existing material, will be accepted in lots. A lot is defined as one day's production if production is greater than 1,000 tons per day. If production is less than 1,000 tons per day, then a lot is as many days' production as necessary to reach 1,000 tons. If plan quantity is less than 1,000 tons, a lot shall be equal to plan quantity. A day's production will not be split into more than one lot.

Three random samples will be taken for each lot of material placed. The sample shall be obtained from the equalized aggregate windrow prior to the blending operation according to the procedures outlined in NDDOT's *Field Sampling and Testing Manual*. The samples will be tested and the material accepted if the average of the 3 samples meets the gradation specified. If the material from all 3 samples meets the gradation specified, only one of the 3 samples will be tested from each subsequent lot. If the sample tested does not meet the gradation requirements, the remaining 2 samples will be tested. The average gradation of the 3 samples will be used to determine acceptance of the material. The testing of 3 samples per lot will continue until all 3 samples meet the gradation specified then only one of the 3 samples will be tested from each subsequent lot. When the aggregate does not meet the gradation specified, a reduction in the Contract Unit Price will be made. If the aggregate fails to meet the specified gradation on one or more sieves, the reduction will be the sum of the deductions as calculated below.

Unit Price Reduction:

Percent of Deduction = $5 \times$ percent of deviation from range limits

If material is produced that deviates from the specified gradation for 2 consecutive lots incorporation of additional material into the work will not be al-

lowed until the Contractor takes the necessary corrective action to meet the specifications.

The physical properties of the aggregate will be determined from three random samples from the stockpile from each lot of 10,000 tons or fraction thereof. If a fraction of a lot is less than 2,500 tons, it will be included with the previous lot of 10,000 tons. If the material from all three samples is within the specified limits, only one of the three samples will be tested from each subsequent lot. If at anytime the sample tested fails to meet the specified limits, the remaining 2 samples will be tested and the physical properties of each lot will be determined by the average of these 3 test results. The testing of three samples per lot will continue until all three samples are within the specified limits then only one of the three samples will be tested from each subsequent lot. If the average exceeds the specified limits for shale, the unit price for aggregate will be adjusted according to Section 302.06. If the average exceeds the specified limits for plasticity index or fractured faces, the Contractor shall correct the stockpile so the material meets specifications.

The L.A. Abrasion loss percentage will be determined on the basis of one composite aggregate sample taken and tested during the beginning of the aggregate stockpiling. If the aggregate source has been tested previously by the Department and the material is within the allowable limits, the tests for the L.A. Abrasion loss percentage will not be required.

2. **Blended Material.** When the blending process begins, the blended material shall be sampled and tested a minimum of two times per day to assure 97 to 100 percent of the material passes a 2-inch sieve and 90 to 100 percent passes a 1 1/2-inch sieve. When the Engineer is satisfied the Contractor is producing blended material within the specified limits, random tests will be taken as determined by the Engineer to assure compliance.

306.03 EQUIPMENT.

Equipment shall meet the following:

Item	Section
General	151.01
Water-Hauling Equipment	151.03 A
Material-Hauling Equipment	151.03 B
Tow-Type Pneumatic-Tired Rollers	151.02 A
Self-Propelled Pneumatic-Tired Rollers	151.02 B
Vibratory Sheep foot/pad foot/ Extended pad foot Rollers	151.02 F
Mining/Blending Machine	151.08

306.04 CONSTRUCTION REQUIREMENTS.

- A. **Pit Operations.** Stripping of the pit and pit operations shall be according to Section 106.02 and other Contract requirements to produce an aggregate meeting the specification for the class specified.
- B. **Adding Corrective Material.** When a combination of materials is required to produce the class of aggregate specified, the aggregate may be blended at the pit or on the road to produce the specified material.

- C. **Aggregate Placement and Blending.** When “Blended Base Course” is specified, the aggregate supplied to be blended with the existing material will be placed and compacted on the roadway to plan cross slope and to a longitudinal profile approved by the engineer prior to blending. It is intended for the contractor to use mining/blending equipment that rides on the existing surface. If the Contractor elects to use equipment that rides on the subgrade, the Contractor shall assure the equipment has sufficient weight distribution to prevent rutting or displacement of the subgrade below the blended material. Any damage caused by the contractor’s equipment riding on the subgrade shall be repaired at the Contractor’s expense.

When “Remove and Relay Blended Base Course” is specified, the Contractor may elect to blend the material on or off the roadway. The use of a Motor Grader to blend the material will not be permitted. The Contractor must prove to the Engineer that the process used to blend the material will provide a uniformly blended base course.

- D. **Blending Depth.** The existing asphalt pavement depth varies. The pavement depths shown in the plans are from cores taken at specified locations. Primed aggregate and bituminous treated base (if present) are not included in the pavement depth. The actual pavement depths at other locations may vary. The Contractor is responsible for interpreting the pavement depths and including all costs in the bid price to process the required depth of existing pavement and existing aggregate.

When “Blended Base Course” is specified, the Contractor shall blend to: the depth shown in the plans or, if the depth shown in the plans is not great enough to process all of the existing surfacing, bituminous treated base (where present), and the existing base, the blending depth shall be increased to the lesser of the following depths:

1. A depth great enough to process all of the supplemental aggregate, existing surfacing and bituminous treated base (where present).
2. A minimum of 18”, measured from top of supplemental compacted aggregate. The distance between the existing asphalt material not mined and the new pavement (asphalt or concrete) shall be a minimum of 18”.

During the blending operation the Contractor shall physically dig down, approximately every five hundred feet (each pass), to check the blending depth and visually verify the full depth of bituminous pavement has been blended without contamination from the subgrade.

When “Remove and Relay Blended Base Course” is specified, and if the Contractor elects to blend the material off the roadway, the entire depth of asphalt pavement shall be removed and blended with the aggregate specified.

- E. **Placement and Compaction of Blended Material.** After blending, the Contractor shall place the blended material as shown in the Plans. The blended material shall be uniform in gradation and compacted to produce a uniform density throughout the entire section. If the material is deficient in moisture content, it shall be moistened to the degree necessary to attain compaction.

Compaction shall be carried out simultaneously with lay down operations. The vibratory sheep foot/pad foot/extended pad foot roller shall be used to obtain com-

paction until the feet/pads ride up close to the surface of the blended base. After this, the road top shall be compacted with a pneumatic roller until the surface is tightly bound and shows no sign of rutting or displacement under the compaction operations or traffic. Vibratory sheep foot/pad foot/extended pad foot and pneumatic tired rollers of the type specified in Section 151 shall be used.

- F. **Soft Areas.** Unstable areas, as determined by the Engineer, that appear after the blended base has been compacted shall be repaired by the Contractor. If the unstable areas are due to poor compaction of the blended base, the Contractor will rework the blended base to obtain adequate compaction. The cost of reworking the blended base will be included in the item "Blended Base Course."

If the unstable areas are due to the subgrade, the Engineer may direct manipulation and drying of the subgrade. Payment for this work will be in accordance with Section 104.03 of the Standard Specifications.

- G. **Application of Water.** Water shall be applied according to Section 216 as needed to secure required results.
- H. **Surface Tolerance.** The surface of the completed base shall be tightly bound, smooth, uniform, and conform to the cross section and grade specified. The surface shall be finished using a Surface tolerance Type B as specified in Section 302.04 G.
- I. **Limitations.** The quantity of aggregate or blended material permitted in windrows on roadways open to traffic, shall not exceed 3 miles. The aggregate or blended material shall be laid within 72 hours after being placed in the windrow.

Aggregate or blended material shall not be placed on a frozen subgrade.

- J. **Maintenance of Completed Courses.** When the Contract includes successive base courses or base and surface courses, each course shall be maintained in a smooth and compacted condition until the succeeding course is placed.

306.05 METHOD OF MEASUREMENT.

- A. **Blended Base Course.** Measurement and payment of the bid item "Blended Base Course" will be by the Square Yard based on the width of the existing asphalt pavement from the outside edge of the slough to the outside edge of the slough.
- B. **Remove and Relay Blended Base Course.** Measurement and payment of the bid item "Remove and Relay Blended Base Course" will be by the Ton or Square Yard. When paid by the Square Yard the quantity will be determined by the width of the existing asphalt pavement from the outside edge of the slough to the outside edge of the slough.
- C. **Aggregate.** Measurement will be by the Ton or Cubic Yard, as specified.
- D. **Water.** Measurement will be made according to Section 216.

306.06 BASIS OF PAYMENT.

Payment will be made at the contract Unit Price for the following:

Pay Item	Pay Unit
Aggregate	Ton or Cubic Yard
Water	M. Gallons
Blended Base Course	Square Yard
Remove and Relay Blended Base Course	Square Yard or Ton

This payment will be full compensation all labor, equipment, and materials necessary to complete the work as required.

When the average of the test results specified in Section 306.02, shows a larger percentage of shale than the maximum allowable specified, a 1% reduction in the unit price will be made for each 0.2% above the allowable percentage. If the percentage of shale exceeds the allowable limit by 3% or more, the material will be rejected unless the material is accepted under Section 105.07.

When a mixture is subject to pay reduction as described in Sections 306.02 and 306.06, the Bid Price will be reduced by the sum of the price adjustments.

